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| 09/961,372 | 09/25/2001 | Hideto Furuyama | 214398US2SRD | 5911 |
| 22850 | 7590 | 10/31/2003 | EXAMINER | |
| OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | ALLEN, DENISE S | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2872 | |

DATE MAILED: 10/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/961,372

Applicant(s)

FURUYAMA, HIDETO

Examiner

Denise S Allen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 and 27-31 is/are pending in the application.
- 4a) Of the above claim(s) 3-24 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 27, 28, 30 and 31 is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☒ Claim(s) 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 Sept. 2001, and 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The substitute drawings were received on July 9, 2003. These drawings are acceptable to the Examiner.

In light of the Applicant's substitute drawings and the Applicant's amendment to the specification on July 9, 2003 (paper #10), the objections to the drawings in the Office Action on April 9, 2003 (paper #8) have been withdrawn.

Response to Amendment

In light of the Applicant's amendment to claim 28 on July 9, 2003 (paper #10), the objection to claim 28 in the Office Action on April 9, 2003 (paper #8) has been withdrawn.

Response to Arguments

In the Applicant's response on July 9, 2003 (paper #10), the Applicant argues with respect to claims 1 and 2, that Kuo et al fails to teach or reasonably suggest forming mirror segments on a clad layer having a flat surface as recited in amended claim 1 (pages 15 – 16). The Applicant further argues with respect to claims 1 and 2, that Kuo et al fails to teach or reasonably suggest forming a circuit pattern on the same flat clad layer as recited in amended claim 1 (pages 15 – 16). Applicant's arguments with respect to claims 1 and 2 have been considered but are moot in view of the new ground(s) of rejection.

The Applicant further argues with respect to claims 27 and 28, that Bazylenko et al and Bhagavatula fail to teach or reasonably suggest a method of making a mirror module by using a double-layered mask as recited in amended claim 27 (page 16). This argument has been fully

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considered and found to be persuasive. The Examiner agrees that Bazylenko et al teaches the use of a single-layered mask for making the mirror.

The rejection of claim 27 under 35 U.S.C. 102(e) as being anticipated by Bazylenko et al in the Office Action on April 9, 2003 (paper #8) has been withdrawn.

The rejection of claim 28 under 35 U.S.C. 103(a) as being unpatentable over Bazylenko et al in view of Bhagavatula in the Office Action on April 9, 2003 (paper #8) has been withdrawn.

Claim Objections

Claims 1, 2, and 29 are objected to because of the following informalities: the limitation “a wiring pattern formed on the flat surface of the first clad layer and the first mirror segment and the wiring pattern being made of electric conductive metal” (claim 1 lines 14 – 15) is unclear because it could be interpreted that the wiring pattern is on the first clad layer and the first mirror segment, wherein the wiring pattern is made of metal; or it could be interpreted that the wiring pattern is on the first clad layer, wherein the first mirror segment and the wiring pattern are made of metal. Suggested correction: replace the limitation with “a wiring pattern formed on the flat surface of the first clad layer, wherein the first mirror segment and the wiring pattern are made of electric conductive metal”. For the purpose of examination this claim limitation is interpreted to mean the wiring pattern is on the first clad layer and that the first mirror segment and the wiring pattern are made of metal. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Kato et al (US 5,394,490).

Regarding claim 1, Kato et al teach an optical interconnection circuit board (Figure 6) configured to guide an optical signal (arrows), comprising: a substrate (references 230 and 231) having a surface (top of reference 231); a first clad layer (reference 232) having a flat surface (top of reference 232) formed on the surface of the substrate; a core layer (reference 233) configured to guide the optical signal in a predetermined direction, the core layer being formed on the flat surface of the first clad layer and extended in the predetermined direction; a second clad layer (reference 233) formed on the core layer; a first mirror segment (reference 238) having a first mirror face (reference 238) configured to reflect the optical signal guided in the core layer through the second clad layer to the outside thereof, the first mirror segment being formed on the flat surface of the first clad layer and the mirror face being contacted to the core layer; and an electric circuit configured to generate an electrical signal (column 9 lines 50 – 53), the electric circuit having a wiring pattern (including reference 236) formed on the flat surface of the first clad layer, and the first mirror segment and the wiring pattern being made of electric conductive metal (column 9 lines 47 – 50 and 66 – 68).

Regarding claim 2, Kato et al teaches a second mirror segment (reference 239) having a second mirror face (reference 239) configured to reflect the optical signal into the core layer (reference 233), the optical signal being incident on the second mirror face from the outside of

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the circuit board through the second clad layer, the second mirror segment being formed on the flat surface of the first clad layer and the mirror face being contacted to the core layer.

Allowable Subject Matter

Claims 27, 28, 30, and 31 are allowed.

Claims 27, 28, 30, and 31 are allowable over the prior art for at least the reason the prior art fails to teach and/or suggest a method of manufacturing an optical interconnection circuit board including the steps of forming a first mask layer with a first opening; forming a second mask layer on the first mask layer with a second opening; wherein the second opening is smaller than the first opening and is aligned with the first opening; and depositing a mirror layer through the first and second opening to form a mirror as set forth in the claimed combination.

Claim 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 29 is allowable over the prior art for at least the reason the prior art fails to teach and/or suggest the first mirror segment of the optical interconnection circuit board being connected electrically to the electric circuit as set forth in the claimed combination.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise S Allen whose telephone number is (703) 305-7407. The examiner can normally be reached on Monday - Friday, 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on (703) 305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Denise S Allen
Examiner
Art Unit 2872


dsa



Audrey Chang
Primary Examiner
Technology Center 2800